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Key Open Door: Simulating Children's Early Three-word Utterances Reveals Simple Statistical Regularities Underlying Telegraphic Speech

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Abstract

A central question for language development is whether very early telegraphic speech, ungrammatical but intelligible, reflects adult-like abstract linguistic competence, or instead is the result of statistical learning without the reliance on the abstract knowledge. In this paper, we develop a simulation paradigm to evaluate the predictive fit of different accounts of three-word utterances children (<20 months) produced. The simulation subjects are a) human adults with full linguistic competence, b) a statistical model that captures local statistical regularities of language input, and c) a deep neural model that learns and processes language input with global context-aware learning mechanisms. The statistical language model predicted child three-word utterances, both grammatical and ungrammatical ones, better than the neural models and even better (but not statistically) than human adults. The findings suggest simple local statistical regularities underlying child early telegraphic speech.